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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/673,598	10/18/2000	Jonathan Ephriam David Hurwitz	1749/270 (20	1926

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EXAMINER

AGGARWAL, YOGESH K

ART UNIT PAPER NUMBER

2615

DATE MAILED: 06/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/673,598

Applicant(s)

HURWITZ ET AL.

Examiner

Yogesh K Aggarwal

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Response to Arguments

1. Applicant's arguments filed 04/07/2004 have been fully considered but they are not persuasive.

Examiner's response

2. Applicant argues that Fukui (US Patent # 5,422,670) does not teach or suggest the recitation that the image sensor is regularly reset so as to commence integration from a reset state of the sensor each time a predetermined period has elapsed as is recited in independent claims 1, 3, 7 and 13. The Examiner respectfully disagrees. It would be inherent that during the period between the reset pulses i.e. when the reset is OFF, the image sensor would be integrating charges and only when the reset pulse is ON, the charges are being reset. If there were no integration of charges during the interval between the reset pulses as argued by the applicant, there would be no need for continuous reset pulses. Therefore Fukui '670 does teach "the image sensor is regularly reset so as to commence integration from a reset state of the sensor each time a predetermined period has elapsed" as is recited in independent claims 1, 3, 7 and 13.

3. Applicant further argues that there is no physical shutter present in Fukui while the present invention, the operation of an imaging system in which exposure is controlled by an asynchronous stimulus such as shutter opening action. The Examiner respectfully disagrees. It is well known in the art that a mechanical shutter would completely shield the image sensor from incoming light when it is closed, thus providing an image output without smear. Therefore it would have been obvious to one skilled in the art that having a mechanical shutter in combination with the electronic shutter taught in Fukui would be

Art Unit: 2615

desirable in order to have an image output without image smear when the mechanical shutter is closed.

Claim Rejections - 35 USC § 102

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1, 2, 5, 7, 8-10, 12, 13, 16, 18, 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Fukui (US Patent # 5,422,670).

[Claim 1]

Fukui teaches a method of operating a solid state image sensor (figure 2 # 3) for the acquisition of an image presented to the sensor in response to an asynchronous stimulus (position sensor detector 4 generates a low-level trigger pulse in response to detection of object 2, figure 2), wherein said image sensor is operated in conjunction with at least one detector (figure 2 # 4) which, directly or indirectly, detects the said asynchronous stimulus (position sensor detector 4 generates a low-level trigger pulse in response to detection of object 2, figure 2), said image sensor is regularly reset so as to commence integration from a reset state of the sensor each time a predetermined period has elapsed (Col. 1 lines 27-31, Figure 1c discloses reset pulses occurring regularly and the charge storage time commencing after a predetermined time), and an output from said at least one detector prior to the end of a current predetermined period determines whether the subsequent reset operation of said image sensor is inhibited or not in that if said output indicates the occurrence of said asynchronous stimulus then the subsequent reset operation of said image sensor is inhibited (Col. 1 lines 49-68, col. 2 lines 1-2 figure 2) [In figure 2, position sensor detector 4 outputs a low-level trigger pulse upon detection of the object 2

Art Unit: 2615

to the shutter pulse generator 5 which generates a low-level shutter pulse to the CCD control circuit 6 which inhibits the reset pulses to the CCD image sensor 3].

[Claim 2]

Fukui teaches wherein the detector (figure 2: 4) outputs a detection signal when said asynchronous stimulus is detected (position sensor detector 4 generates a low-level trigger pulse in response to detection of object 2, figure 2), and said detection signal is used to trigger a reset inhibition control signal for inhibiting a subsequent reset signal to the sensor (Col. 1 lines 51-68, col. 2 lines 1-2 figure 2) [In figure 2, position sensor detector 4 outputs a low-level trigger pulse upon detection of the object 2 to the shutter pulse generator 5 which generates a low-level shutter pulse to the CCD control circuit 6 which inhibits the reset pulses to the CCD image sensor 7].

[Claim 5]

Fukui teaches wherein the asynchronous stimulus is the opening of a camera shutter (Col. 1 lines 49-54)[“ Stimulus” outputs low-level trigger pulse to initiate shutter pulse for image sensor].

[Claim 7]

Claim 7 is an apparatus claim corresponding to method claim 1 and 2. Therefore it has been analyzed and rejected based on method claim 1 and 2.

[Claim 8]

Fukui teaches wherein said at least one detector means (figure 2: 4) and said reset inhibition control signal output means (figure 2: 6) are provided in a single device (Col. 8 lines 12-16, figure 2)[The invention resides in a solid-state imaging device (figure 2) implies that all the components are contained in a single solid-state imaging device]

Art Unit: 2615

[Claim 9]

Fukui teaches wherein said reset inhibition control signal (figure 2: 6) output means and said reset signal generating means are provided together in a single device (Col. 8 lines 12-16 figure 2)[The invention resides in a solid-state imaging device (figure 2) implies that all the components are contained in a single solid-state imaging device]

[Claim 10]

Fukui teaches wherein the detector is formed and arranged for detecting the opening of a camera shutter (Col. 1 lines 41-45).

[Claim 12]

Fukui teaches image capture control apparatus according to claim 7 (Fukui col. 1 lines 8-11. Fukui teaches that the solid state-imaging device, which comprises of the image capture control apparatus is employed in a camera].

[Claim 13]

Claim 13 is an apparatus claim corresponding to method claim 1. Therefore it has been analyzed and rejected based on method claim 1.

[Claims 16, 18 and 19]

It would be inherent that the CCD is integrating during the 64-microsecond period between the reset pulses as disclosed in figure 1 of Fukui. If there is no integration of charges during the interval between the reset pulses as argued by the applicant, there would be no need for continuous reset pulses, so Fukui does teach an integration time period between the reset pulses.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 3, 4, 14, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukui (US Patent # 5,422,670) in view of Guidash (US Patent # 6,218,656).

[Claim 3]

Fukui teaches the following limitations:

A method of using a solid state image sensor (figure 2, # 3) comprising an array of sensing cells (Fukui, col. 2 lines 49-51), for the acquisition of an image presented to the sensor in response to an asynchronous stimulus (figure 2 # 4, col. 1 lines 49-53), wherein said image sensor is regularly reset so as to commence integrating from a reset state of the sensor each time a predetermined period has elapsed (Fukui, col. 1 lines 27-31, Figure 1c discloses reset pulses occurring regularly and the charge storage time commencing after a predetermined time) and the value of this read is used to determine whether a subsequent reset signal to the sensor should be inhibited or not in that if said value indicates the occurrence of an asynchronous stimulus then said subsequent reset signal is inhibited (Fukui, col. 5 lines 29-40). Fukui fails to teach a portion of the array of the sensor (figure 2 # 3) is read prior to the end of a current predetermined period. However these limitations are well known in the art as disclosed in Guidash (col. 6 lines 30-37). Therefore taking the combined teachings of Fukui and Guidash as a whole, it would have been obvious to one skilled in the art to modify the image sensor of Fukui to that of an active pixel sensor (APS) of Guidash such that a portion of the array of the sensor is read prior to each said reset (R) as taught in Guidash. By doing so a photodiode active pixel

Art Unit: 2615

sensor with true correlated double sampling using only 3 transistors results in a high fill factor and low temporal noise as evidenced in Guidash (col. 2 lines 42-47).

[Claim 4]

A method according to claim 3, wherein said portion of the array read prior to each reset (R) comprises a plurality of sensing cells which are spatially distributed throughout the array of sensing cells (Guidash discloses in figure 4 the layout of the pixels spatially distributed throughout the array of the sensing cells).

[Claim 14]

Claim 14 is identical to claim 5. Therefore it has been analyzed and rejected as previously discussed with respect to claim 5.

[Claim 17]

It would be inherent that the CCD is integrating during the 64-microsecond period between the reset pulses as disclosed in figure 1 of Fukui. If there is no integration of charges during the interval between the reset pulses as argued by the applicant, there would be no need for continuous reset pulses, so Fukui does teach an integration time period between the reset pulses.

4. Claims 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukui (US Patent # 5,422,670) in view of Dempsey (US Patent # 5,422,716).

[Claim 6]

Fukui teaches the limitations of claim 1 but fails to teach an asynchronous stimulus, which is a flash of light from a lighting strobe. However this limitation is well known in the art as evidenced by Dempsey (col. 3 lines 62-68, col. 4 lines 1-2, figure 1)[Fukui teaches "stimulus" as generation of trigger pulse signal in response to the flash of light

Art Unit: 2615

from a lighting strobe. Dempsey teaches strobe light intensity as stimulus to generate data reading].

Therefore taking the combined teachings of Fukui and Dempsey as a whole, it would have been obvious to one skilled in the art to modify “stimulus” in Fukui to that of Dempsey, which is a flash of light from a lighting strobe. By doing so several times the average value of light intensity from the strobe can be determined and the average value is more appropriate to determine the effective intensity and thus the ability of the strobe light to warn other aircraft on the airplane’s position as evidenced in Dempsey (col. 4 lines 19-22).

[Claim 11]

Claim 11 is identical to claim 6. Therefore it has been analyzed and rejected as previously discussed with respect to claim 6.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukui (US Patent # 5,422,670) in view of Guidash (US Patent # 6,218,656) in further view of Dempsey (US Patent # 5,422,716).

[Claim 15]

Fukui in view of Guidash teaches the limitations of claim 3 but fails to teach an asynchronous stimulus, which is a flash of light from a lighting strobe. However this limitation is well known in the art as evidenced by Dempsey (col. 3 lines 62-68, col. 4 lines 1-2, figure 1)[Fukui teaches “stimulus” as generation of trigger pulse signal in response to the flash of light from a lighting strobe. Dempsey teaches strobe light intensity as stimulus to generate data reading].

Art Unit: 2615

Therefore taking the combined teachings of Fukui, Dempsey and Guidash as a whole, it would have been obvious to one skilled in the art to modify “stimulus” in Fukui to that of Dempsey, which is a flash of light from a lighting strobe. By doing so several times the average value of light intensity from the strobe can be determined and the average value is more appropriate to determine the effective intensity and thus the ability of the strobe light to warn other aircraft on the airplane’s position as evidenced in Dempsey (col. 4 lines 19-22, lines 26-29).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yogesh K Aggarwal whose telephone number is (703) 305-0346. The examiner can normally be reached on M-F 9:00AM-5:30PM.

Art Unit: 2615

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc Yen Vu can be reached on (703) 305-4946. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YKA
June 9, 2004



NGOC-YEN VU
PRIMARY EXAMINER